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ABSTRACT

An Undergraduate Research Fund (URF) at Indiana University South Bend that has supported over 100 projects and distributed over \$25,000 to students since 1989 has yielded several lessons regarding the program's success. URF not only funded student projects but provided small grants to faculty mentors who encouraged and worked with students. Three data sources provided information on the program: a program database; a 1993 student survey sent to 60 students and returned by 16, and a faculty survey mailed to 218 and returned by 68. Based on analysis, several conclusions were drawn: (1) the URF was effective in stimulating undergraduate research and fostering faculty mentorship; (2) the faculty role was critical to the success of undergraduate research programs; (3) funding should remain flexible; and (4) the program's benefits went far beyond the funds expended as both students and faculty mentors strongly agreed that a URF award helped a student's graduate school or job application. Contains several tables and figures displaying data on the program. (JB)

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Lessons Learned from a Small Grants Program

UNDERGRADUATE RESEARCH FUND
of
Indiana University South Bend

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LESSONS LEARNED FROM A SMALL GRANTS PROGRAM

Program description

Indiana University South Bend is a regional campus of Indiana University. Located in an urban area, the university has the equivalent of over 4000 full-time undergraduate students, however most of these are part time "New Majority" students. Our graduate programs are limited to professional schools in business, education, and social work and a very small Master's of Liberal Studies program.

Since its initiation in 1989, as part of our agenda to enhance undergraduate education, the Undergraduate Research Fund (URF) program at IUSB has supported more than 100 projects in fields as diverse as the projects themselves: ecology, business/finance, fine arts, political science, psychology, literature, history, education, biology, public and environmental affairs, computer languages, writing, theater, and physics. Since 1989, we have distributed over \$25,000 to students and nearly \$9000 to their faculty mentors. In the coming year, IUSB will again fund this program to support projects of research and creative activity developed by undergraduate students in all disciplines, supervised by faculty mentors.

The objectives of this program are to offer incentives to undergraduate students to pursue research, scholarship, and artistic and creative projects. The initiative is especially designed to enable undergraduate students to work more closely with faculty in collaborative scholarly work and creative activity.

The URF program provides funding to cover student research expenses (generally around \$200 per project). Faculty mentors receive \$150 stipends. Under special circumstances, or if more than one student is involved, the committee may award more. Program policies and priorities are established by the interdisciplinary faculty-student undergraduate research committee. All awards are made at the discretion of that committee, dependent upon the availability of funds and quality of the proposals. Although some students are asked to revise and resubmit their proposals, eventually about 90% are funded.

The program is open to all undergraduates in good standing currently enrolled in credit courses at IUSB. To receive funding, students must submit formal proposals, outlining project goals, methodology, a timetable, and a budget. Proposals are reviewed and endorsed by the faculty mentor and submitted to the Undergraduate Research committee for review and action. Support may be awarded for independent study projects, field research, papers presented at professional meetings, research and creative internships guided by faculty, or for special outside work undertaken in conjunction with a credit course. Funds may also be used to support work which is part of an Honors Thesis project.

All IUSB faculty are informed periodically about grant availability and deadlines and are asked to encourage their undergraduate students to develop proposals for funding. The URF garners attention through Faculty Senate announcements, campus mail and e-mail notices, brochures around campus, and notices to the school newspaper. Several finished projects, including proposals and budgets, are kept on reserve at the Schurz Library for students' reference. In 1994-

1995, we went "on line" making the applications available to students and faculty across campus. To speed voting and make the administrative process less unwieldy, we've implemented a listserv for URF committee members. The listserv enables in-depth discussion about project proposals and policy issues, eliminating the need for coordinating faculty schedules.

The Merit Award for Outstanding Research, a prize of \$100, is given to the best undergraduate research project of the year. This Award is presented during the Honors Day ceremony. All of that years grant recipients are recognized during that ceremony. We have recently implemented a summer fellowship program that awards fellowships of \$2000 to undergraduates so that they can devote their entire summer to research. This program generated a number of excellent proposals. Each year, those who complete their program of research are noted in an annual article published by the city newspaper.

Procedures and results

We have three main sources of data about the program. First, we have a database containing information about each grant from 1989 through February 1995. Second, we have a survey of student grant recipients from Fall 1993. Third, we have data from a survey of faculty, both mentors and non-mentors, from Spring 1995.

Program information (database). The database indicates that the URF program has awarded 102 grants in the past 5.5 years, for an average of 17 grants per year. Of those 102, 81 have been completed, 14 are in progress, and 7 have been cancelled. (Cancellation reasons vary from personal problems to an outbreak of war in the conference site city.)

A total of 58 professors have been mentors for grants, mentoring 1 to 8 grants each. Grants have been distributed across the disciplines, with 43% in the social sciences (psychology, sociology, communications, education, and business/economics); 23.5% in liberal arts (English, political science, history, math, computer science); 19% in physical sciences (physics, chemistry, biology); and 15% in fine arts (art, dance). The number of URF grants per discipline vary widely over the years, largely due to the efforts of a few extremely active faculty mentors.

Grants have ranged from \$83 up to \$1000 (to four students who were publishing a new journal), with an average of \$244. To date, \$25,162 has gone to students and \$8700 to faculty mentors (who receive a \$150 stipend).

Student survey. In the summer of 1993, we mailed surveys to the 60 students who had received grants. Many of these students had graduated and were not located, but 16 returned completed surveys. Although this is a low return rate, the responses were remarkably uniform in their positive attitudes towards the URF program. The single most positive response (a mean of 3.9 out of 4 points) was to the question "I feel that my URF project helped me in my educational progress." Students also strongly agreed that the URF project "gave me a better understanding of the role of research in learning." Responses to all twelve items about the program were strongly positive.

A second section of the survey asked about the project's design and implementation. Students strongly agreed that their mentor was available and helpful. They also indicated that the experience met their expectations as an educational experience and in terms of personal fulfillment.

Some of the free-response comments explained their ratings. "This project was by far the most valuable element of my undergraduate education in sociology. I did a study in the history of sociology and learned more by putting the issues and debates of the discipline into historical

context than in all of my other courses combined."

"My project allowed me to present a paper I had written at a conference. While attending that conference I gained a lot of confidence both in my ability to do quality research and to present my findings."

"Good experience in tenacity and continuation despite interruptions. Wonderful to feel support and to learn how much more and more there is to learn as each stage is completed, difficulties in process are resolved and new possibilities explored."

Faculty survey. In the spring of 1995, we distributed questionnaires through the campus mail to all full-time faculty (218 total). A total of 68 questionnaires were returned, 28 from mentors and 40 from non-mentors. Respondents were very positive about most aspects of the program, regardless of their mentoring status, agreeing that the program looked good on a student's record, was good grants experience for students, and encouraged student research. They strongly agreed that the program should be continued. The only significant differences between mentors and non-mentors were on the items "applying is worth the effort" (mentors were more likely to agree); "my students' projects are eligible" (mentors were more likely to agree); and "I will probably mentor a student in the coming year (mentors were more likely to agree). Faculty were only slightly positive about the benefits for faculty on items "looks good on faculty vita/dossier" and "good grants experience for faculty."

Those who had mentored URF projects were asked about that experience. They strongly agreed that their students' final project was excellent and that they would urge students to apply in the future. They agreed that the grants had helped their students in job and graduate school applications. Mentors were positive about all aspects of the program, from size of the awards to the application forms.

In response to an open-ended question about benefits to the student, mentors had comments such as:

"Enabled them to participate in research and begin to think of themselves as scholars."

"It helped them understand how to put a proposal together and, even more importantly, it made them think of themselves more as professionals."

"It indicated institutional commitment."

"Encouraged a more sophisticated project than would have been undertaken otherwise."

"The work that he did during the research period strongly influenced his way of thinking, changing the direction of his art-making in a fundamental way. The mentoring experience helped him gain confidence and self-worth."

In general comments about the program, mentors said:

"For my student, the award itself was the major goal--not the money. He wanted to be able to list the award on grad school applications."

"I think it is good for our students--it shows we take them seriously and that we expect them to perform as professionals-in-training. . . . serious undergraduate research can be among the most memorable of college experiences--the URF grants encourage this."

Lessons Learned

Based on our information and experience, we feel confident in drawing several conclusions about the URF small grants program.

1. The URF program is effective in stimulating undergraduate research and fostering faculty mentorship.

Although some undergraduate research would undoubtedly go on without the program, the program encourages more elaborate projects by covering basic expenses. (Even \$200 can be important to students on very tight budgets.) The requirements for faculty mentorship ensure that the student will have frequent contact with their mentor. Many professors seek out their most promising students, urging them to submit grant requests.

2. The faculty role is critical to the success of an undergraduate research program.

First, faculty are the way students learn about the program. 80% of the mentors and 85% of the students indicated that the professor first mentioned applying for an URF grant. Because IUSB is a commuter campus with an older "new Majority" student population, it is hard to reach the students with information about new programs. Bulletin board notices and campus newspaper articles were not particularly effective. However, faculty can be contacted reliably through campus mail and e-mail.

Second, faculty are already working with students. Our campus has few research-oriented graduate programs, and most of the graduate students are working full time. Thus faculty who are interested in working with students often turn to the upper-level undergraduates. It is interesting to note that just 5 professors account for nearly one-third of the URF grants (32 out of 102). These are professors who routinely involve students in their research programs and who have learned the value of the URF grants for their students' independent work.

3. Funding should be flexible.

Our grant program began with a \$200 limit. However we soon found that some students had a legitimate need for more money. Materials for the fine arts and chemistry regularly top the \$200 limit, and travel costs can quickly add up. We now say that we fund an *average* of \$200 per grant.

We were initially reluctant to fund travel expenses, but we soon learned that travel to present conference papers is extremely valuable in the socialization of students. We have also noticed that students in the liberal arts, who may not have many reimbursable expenses, are still eligible for grants to present their work.

With some unexpected resources, we recently instituted a summer fellowship program that funded two students for a full summer's work at \$2000. We received excellent proposals from all disciplines, and funded one student who proposed an ambitious laboratory genetics study and another who will write short stories based on the recollections of her elderly Southern relatives. Both faculty and students were extremely interested in continuing or expanding this program, although not at the expense of the small grants program.

4. The benefits go far beyond the money.

Both students and mentors strongly agreed that an URF award helps a student's graduate school and job applications. Such an award not only indicates that a student is capable of research, but that he or she has initiative and persistence. Mentors described how the experience increased student self-confidence and esteem and helped the student feel like a professional in their field.

The rewards to faculty seem to be the intrinsic satisfaction in mentoring a student and seeing that student succeed. Our URF grants routinely include a \$150 stipend to the faculty mentor, but mentors do not seem to be motivated by that money. Many give the funds to their student and others channel it back into their overall research project. We may need to consider lowering or ending the stipend and using those funds for more student grants.

In conclusion, we have found that a small grants program can be very effective in promoting undergraduate research. Even small grants can allow students to pursue research, create fine art, or attend conferences. The structure of our program also ensures faculty involvement, which seems to be as critical as the actual funding. This is a program that could be duplicated at a relatively low cost on many campuses.

TABLES

<u>Discipline</u>	<u>Grants</u>	<u>Student survey</u>	<u>Mean</u> (4=high)
Fine arts	15	helped my educ. progress	3.94
Communication	4	helped relationship with faculty	3.41
Bus. & Econ	3	understand role of research	3.65
Education	4	more interest in grad school	3.24
SPEA	3	led to vocational opp.	3.07
Psychology	17	led to more in-depth research	3.25
Sociology	13	published research	2.77
History	7	presented at conference	3.14
Poli Sci	2	let to later projects	3.12
English	10	helped complete honors	2.50
Math	1	helped complete BS	3.07
Computer Sci	4	helped grad. apps	3.36
Biology	6	mentor helped write	3.24
Chemistry	9	mentor was avail/helpful	3.71
Physics	4	mentor reviewed at end	3.29
TOTAL	102	time went as planned	2.88
		budget as planned	3.18
		received help, as planned	3.41
		fulfillment, as expect	3.50
		as educ., as expected	3.50

<u>Faculty survey</u>	<u>Mentor</u>	<u>Not mentor</u>	<u>Faculty survey, cont.</u>	<u>Mentor</u>
program well-publicized	3.18	2.99	number of grants mentored	2.37
looks good on student record	3.64	3.69	would have done, if no grant	2.59
applying is worth effort	3.64	3.16	application form clear	3.37
good grants exper. for student	3.46	3.38	heard from grant promptly	2.89
looks good on faculty vita	2.82	2.97	reimbursed promptly	2.86
my students' projects eligible	3.15	2.74	size of awards good	2.86
program encourages research	3.46	3.22	final project was excellent	3.42
small grants should be continued	3.71	3.68	reports turned in promptly	3.14
summer program continued	3.54	3.60	grant helped grad school apps.	3.07
good grants exper. for faculty	2.50	3.03	grant helped job search	2.87
I'll mentor one next year	2.92	2.06	I encourage them to apply	3.65

Figures for Student Survey

Survey of Students

Sent to all previous URF awardees (N=60)

Replies: 16 returned

Two page questionnaire

Most items were ratings:

strongly agree 4 agree 3 disagree 2 strongly disagree 1

Background info

*class rank, major, employment

*source of info about URF

Ratings about URF experience

*helped in my educational progress

*gave me better working relationship with faculty

*gave me better understanding of role of research

*made me more interested in grad/professional

*led to vocational opportunity later

*led to more in-depth work in my research area

*led to getting published

*led to presentation (conference)

*led to doing other research projects later

*helped me complete honors requirement

*helped me complete undergrad major

*helped me get into grad/professional school

Project's design and implementation

*mentor helped with proposal and budget

*mentor was available and helpful

*mentor reviewed finished project

*in time, proceeded as planned

*in money, proceeded as planned

*in outside help, proceeded as planned

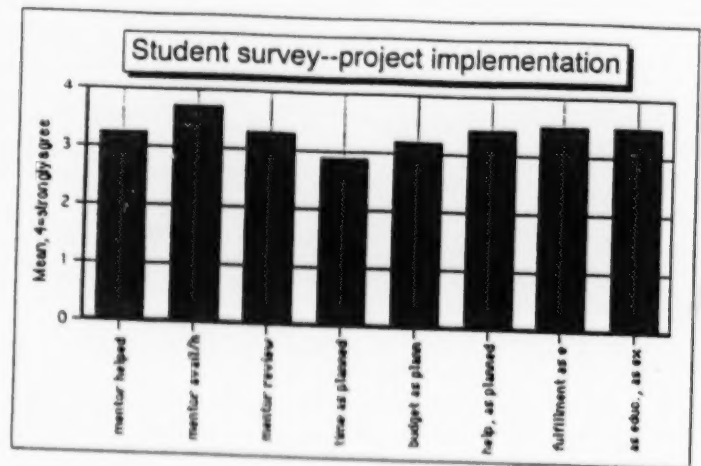
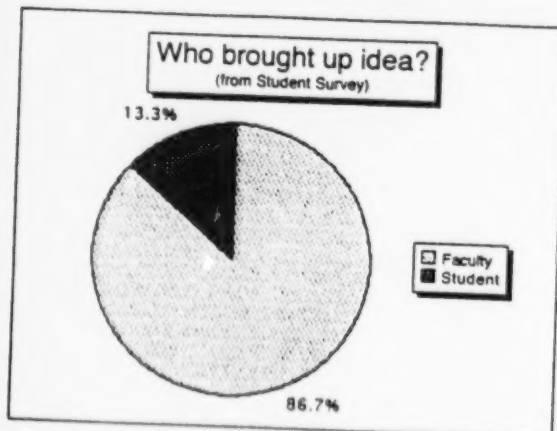
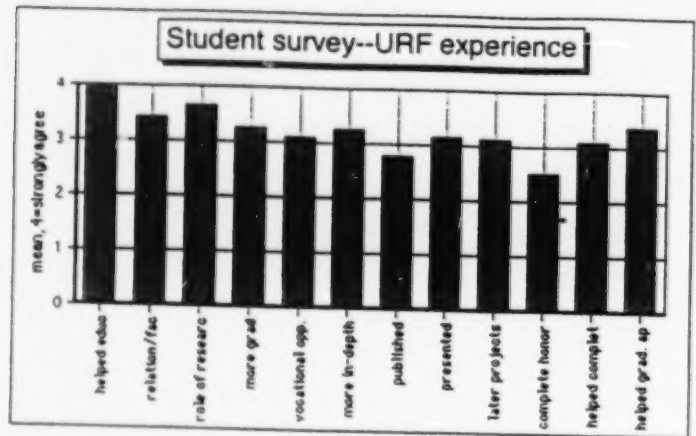
*in terms of personal fulfillment, was as expected

*as educational experience, was as expected

Open-ended questions

*What was the most important thing you learned from your project?

*Suggestions or comments



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Figures for Faculty Survey

Survey of Faculty

Sent to all faculty via campus mail

Replies: 28 mentors (had mentored 64 grants of 102 total)

40 non-mentors

68 respondents (Out of 218 fulltime faculty)

Two page questionnaire

Most items were ratings:

strongly agree agree disagree strongly disagree
4 3 2 1

Some questions were worded in negative manner
All converted so that "4" = favorable to URF grants

General attitudes towards URF grants

- *program well-publicized
- *looks good on student record
- *worth the effort to apply
- *good grants experience for student
- *looks good on faculty vita
- *my students' projects eligible
- *grants encourage student research
- *program should be continued
- *summer fellowships should be continued
- *good grants experience for faculty
- *I will probably mentor one next year

Attitudes and experience of past mentors

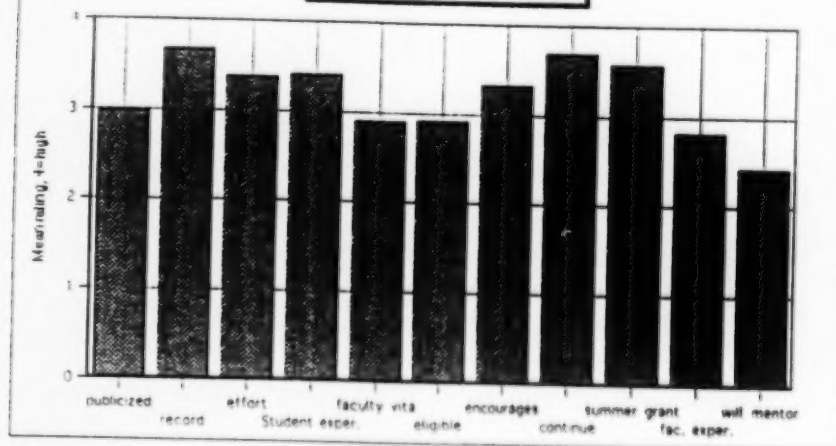
(mentors only)

- *how many projects have you mentored?
- *student would have done project without grant
- *application form was clear
- *heard promptly about funding
- *student was reimbursed promptly
- *awards are large enough
- *student's final project was excellent
- *final reports were turned in promptly
- *grant helped in student grad school applications
- *grant helped in student job search
- *I encourage my students to apply for grants

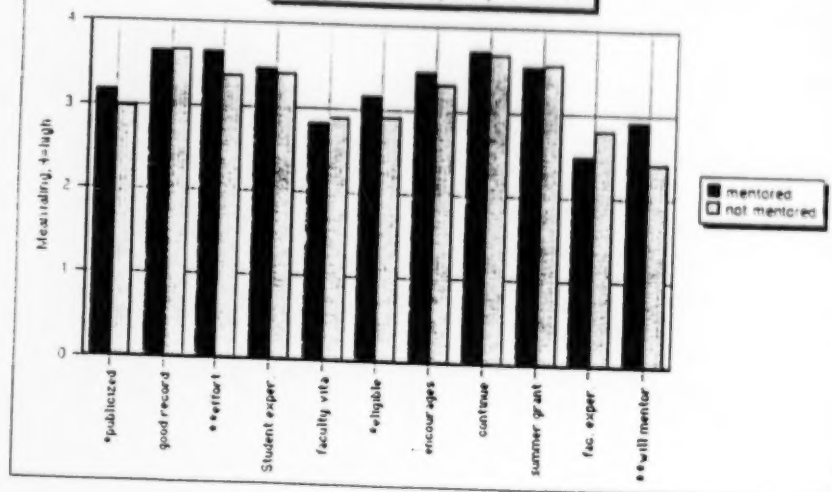
*Department

- *Who brought up idea of applying for grant
- *How did they hear about the grant program?
- *How did the award benefit your student?
- *Any other comments

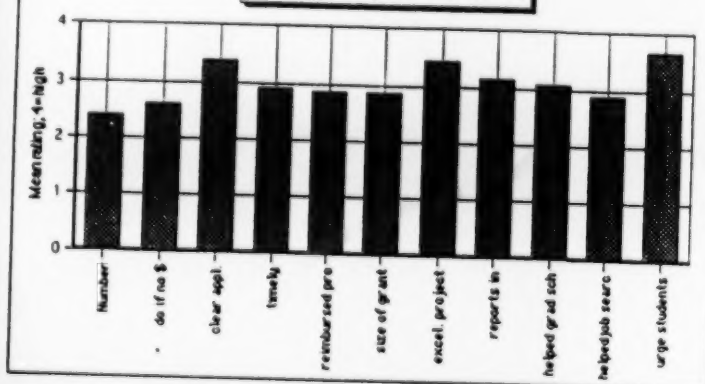
URF ratings, combined



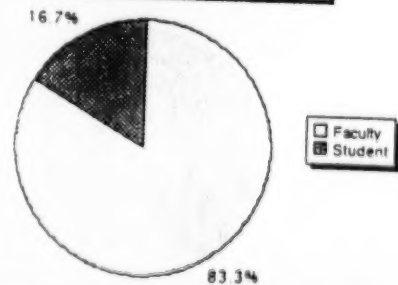
URF ratings by experience



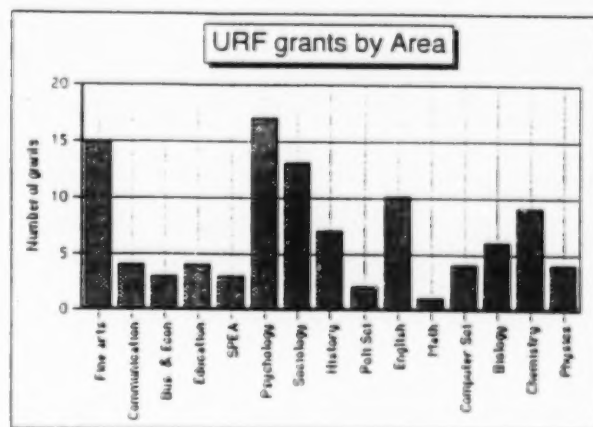
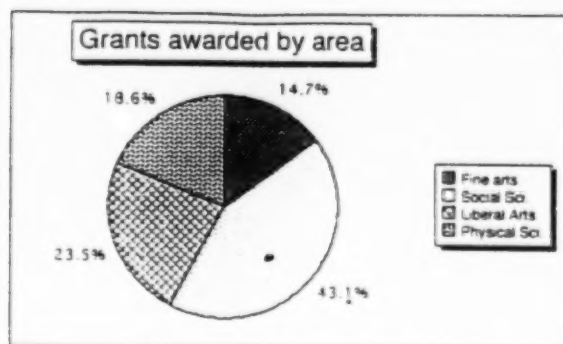
Ratings of past mentors



Who brought up the idea of an URF grant?



Figures for Database Information



Some URF Topics:

Papermaking

Dance performance (3 leotards, audiocassettes)

Economic analysis of Indiana Public Schools

Conference presentation on IUSB Parent Project

Motivating Aspects of Lego Logo (entire class)

IUSB Women's Journal (4 students edited a new journal)

Social Action Project

(community psych in Benton Harbor and Nigeria)

Qualitative Analysis of Bingo

(student "stakes" for entire class)

Beat Poets

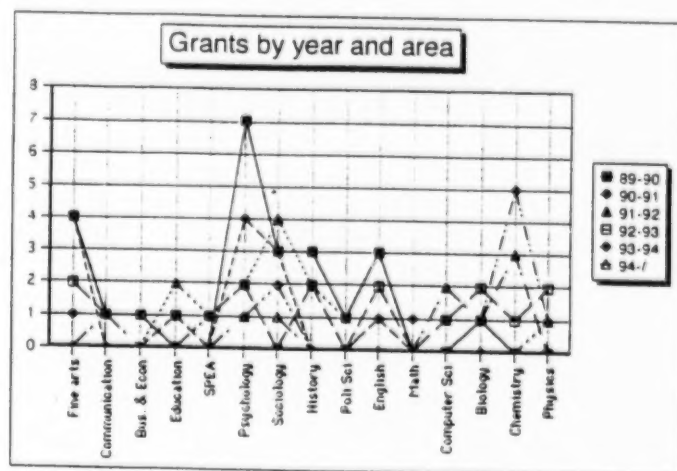
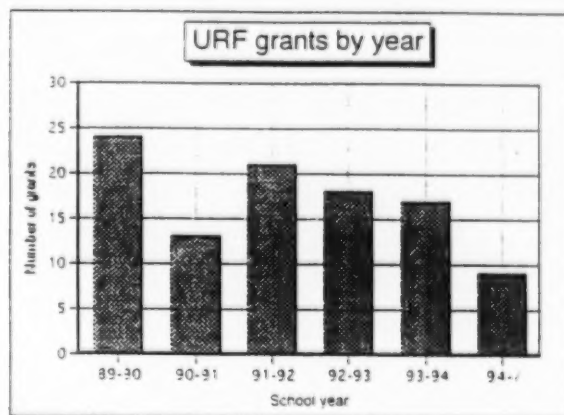
(tape with poetry reading, bongos in background)

Purification of Arsenite Oxidase

Dead End (wrote, directed, produced video movie)

Aerodynamics of leaves (build wind tunnel)

Investigation into Q Learning



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